

WHAT IS CLAIMED IS:

1. An antenna apparatus for a vehicle, said antenna apparatus being provided on the vehicle in which at least a part of constituent members of the vehicle is made of an electrically non-conductive material,

wherein the antenna apparatus has at least one non-earthed type antenna,

wherein said non-earthed type antenna is provided with a first element connected to an inner conductor of a coaxial line via a first connection point, and a second element connected to an outer conductor of said coaxial line via a second connection point, and

wherein at least both said first and second elements and both said first and second connection points are arranged in a portion which is inside the constituent member made of said electrically non-conductive material and is apart from the earthed conductor on the part of the vehicle body.

2. The antenna apparatus for a vehicle as claimed in claim 1, wherein a leader portion of the coaxial line for said non-earthed type antenna to said first and second connection points is drawn out in a different direction from respective extending directions of said first and second elements.

3. The antenna apparatus for a vehicle as claimed in claim 1, further comprising at least one earthed type antenna, wherein the outer conductor of the coaxial line for said earthed type antenna is earthed on the vehicle body.

4. The antenna apparatus for a vehicle as claimed in claim 3,

wherein said earthed type antenna is set so as to cover a lower frequency band than a receivable frequency band of said non-earthed type antenna.

5. The antenna apparatus for a vehicle as claimed in claim 3, wherein the coaxial line for said earthed type antenna is structured such that the inner conductor is covered with the outer conductor at least a part of a range from the earthed portion to a feed portion.

6. The antenna apparatus for a vehicle as claimed in claim 3, wherein respective feed portions to said non-earthed type antenna and the earthed type antenna are connected to coaxial lines for the respective antennas by one connector.

7. The antenna apparatus for a vehicle as claimed in claim 3, wherein the coaxial lines for the respective antennas connected to the respective feed portions to said non-earthed type antenna and the earthed type antenna are cramped on the part of the vehicle body at least in a part of the coaxial lines by a holding member.

8. An antenna apparatus for a vehicle, comprising a feeder line and antenna elements connected to said feeder line, and said antenna apparatus being provided on the vehicle in which at least a part of constituent members of the vehicle is made of an electrically non-conductive material, wherein said antenna elements are provided with a first antenna element which extends in a direction moving apart from a vehicle body, and a second antenna element and a third antenna element which are branched from said first antenna element and extend in substantially reverse directions to each other in a direction crossing to the first antenna element.

9. The antenna apparatus for a vehicle as claimed in claim 8,

wherein said antenna elements are provided with a fourth antenna element which folded back in an approximately perpendicular direction from a terminal portion of said third antenna element.

10. An antenna apparatus for a vehicle as claimed in claim 8, wherein said antenna elements are formed in an approximately T-shaped as a whole by a first antenna element, a second antenna element and a third antenna element, a low frequency band is constituted by said first antenna element and the second antenna element, a high frequency band is constituted by said first antenna element and the third antenna element, and a length of said third antenna element is set on the basis of a value obtained by multiplying a length of said second antenna element by a predetermined coefficient.

11. The antenna apparatus for a vehicle as claimed in claim 10, wherein said predetermined coefficient is changed in correspondence to a magnification of a frequency of said high frequency band with respect to a frequency of said low frequency band.

12. The antenna apparatus for a vehicle as claimed in claim 11, wherein said predetermined coefficient becomes smaller in accordance with an increase of said magnification.

13. The antenna apparatus for a vehicle as claimed in any one of claims 1 to 12, wherein said constituent member made of an electrically non-conductive material is an outer panel of an opening and closing body for opening and closing an opening of the vehicle body.

14. The antenna apparatus for a vehicle as claimed in any one of claims 1 to 12, wherein said constituent member made of an electrically

non-conductive material is an air spoiler.

15. The antenna apparatus for a vehicle as claimed in any one of claims 1 to 12, wherein said constituent member made of an electrically non-conductive material is a bumper face.

16. The antenna apparatus for a vehicle as claimed in any one of claims 1 to 12, wherein said constituent member made of an electrically non-conductive material is a window portion.

17. The antenna apparatus for a vehicle as claimed in claim 16, wherein said antenna elements are mounted to a window glass of the window portion.

18. The antenna apparatus for a vehicle as claimed in any one of claims 1 to 12, wherein said electrically non-conductive material is a synthetic resin material.

19. The antenna apparatus for a vehicle as claimed in any one of claims 1 to 12, wherein said antenna elements are arranged on an antenna substrate formed in a thin plate, and is mounted to a vehicle body member via said antenna substrate.